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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,969	10/24/2003	Ralph Kurt	081468-0306353	6969
909	7590	12/27/2005	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP			MATHEWS, ALAN A	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2851	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EK

**Office Action Summary**

Application No.

10/691,969

Applicant(s)

KURT, RALPH

Examiner

Alan A. Mathews

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/24/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. After reviewing Applicant's REMARKS filed October 11, 2005, concerning the Information Disclosure Statement, the Examiner has located the reference No. XP-002252810 with the document SG72598 under the heading AB. The IFW file for the instant application does not show an additional PTO-1449 being filed as stated in Applicant's REMARKS, but the Examiner is including a copy of the PTO-1449 filed on October 24, 2003, with the document SG 72598 being initialed (along with all the other documents being initialed again). The Examiner appreciates Applicant's explanation of where to locate document SG 72598.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moors et al. (U. S. Patent Application Publication No. 2002/0109828 A1) in view of the Japanese patent document JP 06230194. Moors

et al. discloses in figure 1 and paragraphs # 64-# 70, an illuminator LA and IL for providing a projection beam. Support structure MT holds patterning device MA. Substrate table WT holds substrate W. Paragraph # 67 discloses that the projection system PL could be a mirror system. Thus, Moors et al. discloses the invention except for disclosing that the projection system has a layer comprising Buckminsterfullerenes. It is noted that in paragraph # 21 of the specification of the instant application, it states that "Buckminsterfullerene" is also termed "fullerene". The Japanese patent document JP 06230194 discloses in figure 7 and in the Abstract and in the machine translation, a mirror with a layer 1 having fullerene C60. Under the section "DETAILED DESCRIPTION", on page 4, the machine translation discloses applying the reflective mirrors to **X-ray lithography** (i.e. teaches the combination of X-ray lithography and mirrors having fullerene layers). The outer layer 1 could be considered to be a capping layer, since it is on top. This outer layer 1 would also protect the mirror, since the improved efficiency in reflection would mean less heat is absorbed by the reflector. And too much absorbed heat can lead to thermal damage to the reflector. On page 4, under the section "DETAILED DESCRIPTION", the last line of paragraph # 3 states, "heat-resistant improvement is called for". Figure 7 discloses a multi-layer mirror. With respect to claim 15, paragraph # 4 under "DETAILED DESCRIPTION", discloses using a wavelength of about 49A. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the reflective projection system in Moors et al.

with a fullerene (Buckminsterfullerene) layer in view of the Japanese patent document JP 06230194 for the purpose of shortening the exposure time (since the layer has such a high reflectance factor), and thus improving productivity.

4. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moors et al. (U. S. Patent Application Publication No. 2002/0109828 A1) in view of the Japanese patent document JP 06230194 as applied to claim 21 above, and further in view of Dougherty et al. (U. S. Patent No. 5,391,329). Moors et al. discloses the invention except for disclosing that the optical element is a sensor. Dougherty et al. discloses in the Abstract and in column 1, line 19, and column 2, lines 16, a sensor having a Buckminsterfullerene film. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to the modified device of Moors et al. and the Japanese patent document JP 06230194 with a Buckminsterfullerene film in view Dougherty et al. for the purpose of better protection.

5. Claims 1, 16, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moors et al. (U. S. Patent Application Publication No. 2002/0109828 A1) in view of David et al. (U. S. Patent No. 5,888,594). Moors et al. discloses in figure 1 and paragraphs # 64-# 70, an illuminator LA and Il for providing a projection beam. Support structure MT holds patterning device MA. Substrate table WT holds substrate W. Paragraphs # 65 - # 67 disclose the use of masks. Thus, Moors et al. discloses the invention except for disclosing that the projection system has a layer comprising Buckminsterfullerenes. David et al. discloses in column 1, lines 24 and 25, placing mechanical and chemical protective coatings on items. Column 8, lines 63-

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67, discloses that this protective film could be a buckminsterfullerene. Column 11, line 15, discloses making microlithographic masks with these buckminsterfullerene coatings. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide Moors et al. with a mask which has a buckminsterfullerene coating in view of David et al. for the purpose of providing a more durable lithographic machine.

6. Claims 1-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babsoneau et al. (U. S. Patent No. 6,724,465) in view of the Japanese patent document JP 06230194 (cited on Applicant's PTO-1449). Babsoneau et al. discloses in figure 3 an illuminator for providing a projection beam. Mirrors 24, 26, and 29 are mirrors which have multiple layers (see figure 10). Substrate support 16 holds substrate 18. Mask 24 (patterning device) is supported by a support structure. Thus, Babsoneau et al. discloses the invention except for disclosing that the mirrors of the projection system have a layer comprising Buckminsterfullerenes. It is noted that in paragraph # 21 of the specification of the instant application, it states that "**Buckminsterfullerene**" is also termed "**fullerene**". The Japanese patent document JP 06230194 discloses in the Abstract and in the machine translation (cited on the Examiner's PTO-892), a mirror with a layer 1 having fullerene C60. Under the section "DETAILED DESCRIPTION", on page 4, the machine translation disclosing applying the reflective mirrors to **X-ray lithography** (i.e. teaches the combination of X-ray lithography and mirrors having fullerene layers). The outer layer 1 could be considered a capping layer, since it is on top. This outer layer 1 would also protect the mirror, since the improved efficiency in reflection would mean less heat is absorbed by the reflector. And too much absorbed heat can

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lead to thermal damage to the reflector. Figure 7 discloses a multi-layer mirror. With respect to claim 15, paragraph # 4 under DETAILED DESCRIPTION of the machine translation discloses using a wavelength of about 40A. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the reflective projection system in Babsoneau et al. with a fullerene (Buckminsterfullerene) layer in view of the Japanese patent document JP 06230194 for the purpose of shortening the exposure time (since the layer has such a high reflectance factor), and thus improving productivity.

7. Claims 1, 11, 14, 16, 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moors et al. (U. S. Patent Application Publication No. 2002/0109828 A1) in view of Tutt (U. S. Patent No. 5,172,278). Moors et al. discloses in figure 1 and paragraphs # 64-# 70, an illuminator LA and II for providing a projection beam. Support structure MT holds patterning device MA. Substrate table WT holds substrate W. Thus, Moors et al. discloses the invention except for disclosing that the projection system has a layer comprising Buckminsterfullerenes. It is noted that in paragraph # 21 of the specification of the instant application, it states that "Buckminsterfullerene" is also termed "fullerene". Tutt discloses in figures 10a and 10b and column 3, lines 26-65, a protective optical apparatus 10 which has buckminsterfullerenes. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide some optical element in the lithographic projection apparatus of Moors et al. with a protective device including buckminsterfullerenes in view of Tutt for the purpose of improving the durability of the apparatus.

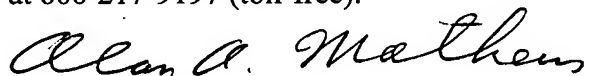
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan A. Mathews whose telephone number is (571) 272-2123.

The examiner can normally be reached on Monday through Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alan A. Mathews  
Primary Examiner  
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AM